

REMARKS

A copy of the International application document PCT/ES02/00004 filed 8 January 2002 is enclosed in Spanish.

A copy of the granted European patent EP 1350897B1 is enclosed in English.

A new Abstract is enclosed which overcomes the objection under MPEP §608.01(b) as to the word limitation.

A new set of drawing sheets FIGS. 1-8 is enclosed to overcome the drawing objection due to blurred and non-uniform reference numbers in enclosed.

The specification has been amended on page 4 to mention the alarm 37 and the drawings now show the alarm and overcome the objection under 37 CFR 1.83 (a) that every feature must be shown, including the "alarm" of claims 2 and 8. The alarm was previously discussed on sheet 4 and therefore no new matter is entered.

The references of record and the bases of rejection have been carefully studied. With respect, the applicant does not agree that Kuhn is an appropriate reference to deny patentability.

Some types of waste such as foam, oil, detergents and sandstone produce waste that settles to the bottom of the pipe creates a barrier, see Fig. 4 of prior art, causing back-up until a natural outlet is found with the result that flooding occurs together with an unpleasant odor since the water is usually of a fecal nature.

Kuhn does not solve this problem. Kuhn is intended to prevent water from entering the siphon when it is blocked by waste. **It does not prevent** the siphon from becoming blocked nor does it provide an alternate route when it is blocked. Therefore the water flows back until it finds an outlet and floods. Furthermore, blocking the outlet opening by means of a ball may occur when no-one is present, as when vacations occur, resulting in considerable damage. This is prevented by the present invention.

Two figures are presented which illustrate the distinction between the two devices.

Sketch A1 shows the Kuhn device. Sketch B1 shows Applicant's device.

Sketch A1 Under normal conditions water enters the siphon through opening 10 and flows through one of two routes indicated by green arrows. When waste creates a blockage, shown by B in yellow, it prevents water flow from inlet pipe 10 to outlet pipe 11. Opening 14 does not relieve the pressure as it is also blocked. The only possible flow is backwards, as shown by the red arrows. This tends to keep the balls imprisoned in hollow 13 as no water rises through opening 14 and will be unable to push the balls towards inlet opening 10 thereby preventing the balls from carrying out their intended function which is to protect a dwelling.

Even accepting that balls 15 block the entrance to the house on engaging collar 16, the water cannot enter the siphon and will start a backflow.

Sketch B1 shows the two-way trap of the present invention which illustrates, to the contrary, that water continues to flow even though the bottom of the siphon is blocked. In applicant's device there are no balls used and no ball blocking function. In fact, the use of balls would hinder flow by way of an alternate route through the system and yet **one or more balls is essential** to the Kuhn system.

As can be seen from Sketch B1 by the green arrows the water flow is normal when there is no blockage. However, after a period when, due to a build-up of waste, there is a blockage, a different path is followed. When there is blockage at B the path of the water is either deflected upwardly by the waste that is deposited in the siphon following the red arrows into the supplementary by-pass created by the branch pipe or deflected upwardly upon encountering the hard waste. In any event, the flow will be directed away from the blockage and water **will never stop flowing** and backflow and flooding will be avoided. Also, because of the formation of a supplemental trap, foul air will not flow backwards.

Claim 1 recites that the two way trap comprises an inlet pipe and an outlet pipe; a general trap section is attached to and disposed between the outlet pipe such that when filled with water to an equilibrium water level equal to the lowest level of the outlet pipe, air does not freely communicate between the inlet pipe and the outlet pipe; and an auxiliary trap attached to one of said inlet pipe and general trap section at a point above the equilibrium water level at a first end and attached to the general trap section at a point below the equilibrium water level at a second end, such that if the general trap section became blocked water would flow through the auxiliary trap section yet air would not freely communicate between the inlet pipe and the outlet pipe.

The prior art represented by Kuhn does not provide a system in which a new auxiliary trap is formed and the water continues to circulate and never stops flowing. Accordingly, Kuhn does not avoid backflow and flooding problems.

Claim 2 depends from Claim 1 and distinguishes therefrom by reciting that the two-way trap comprises an alarm 37 for indicating when the water is flowing through the auxiliary trap section because the general trap section is blocked which should warn of the need to drain the siphon. This time period need not be immediate as there will be a finite period of time available when water continues to circulate.

This alarm is referred to in the detailed description of the invention and is not new matter. For convenience it is now specifically referred to by number 37 in Fig. 5.

The prior art does not disclose an alarm which is provided in a two-way trap having the character defined in Claim 1 and therefore Claim 2 is believed to be allowable.

Claim 3 depends from Claim 1 and distinguishes therefrom by reciting that the two-way trap further includes a manhole access for repair. Claim 4 also depends from Claim 1 and distinguishes by reciting that the auxiliary trap is in vertical alignment. Claim 5 depends from Claim 1 and distinguishes by reciting that the auxiliary trap is offset to one side of the general

trap. Claims 2-5 depend from an allowable claim having the character defined in claim 1 and are also allowable.

Claim 6 is similar to Claim 1 except that it is recited in the two-part format. Claims 6 recites that the improvement comprises an auxiliary trap disposed between the inlet pipe and the outlet pipe and having an inlet end operatively attached to the inlet pipe and an outlet end operatively attached to the outlet pipe below the equilibrium water level, such that if the general trap became blocked, water would flow through the auxiliary trap yet air would not freely communicate between the inlet pipe and the outlet pipe.

Claim 6 is allowable for the same reason as Claim 1.

Claim 7 depends from Claim 6 and distinguishes therefrom by reciting that the auxiliary trap includes an access manhole. Claim 8 depends from Claim 6 and distinguishes therefrom by reciting an alarm for indicating when water is flowing through the auxiliary trap. Claim 9 depends from Claim 6 and distinguishes therefrom by reciting that the diameter of the auxiliary trap is smaller than the diameter of the general trap. Claim 10 depends from Claim 6 and distinguishes therefrom by reciting that the general trap and the auxiliary trap are formed from straight plastic pipe.

The prior art does not disclose these features in an invention having the character defined in Claim 6.

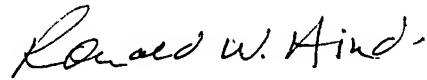
To summarize the advantages of applicant's two way trap:

There is a greater drainage capacity. The time that the passage can remain blocked without adverse effects is extended. The alarm permits knowing when the main siphon is blocked

or partially blocked **without paralyzing the drainage function**. Once the blockage is detected **it is not necessary to act immediately to effectuate its cleaning**. The double passage permits planned cleaning of the blocked siphed. And finally, balls are unnecessary.

For the above reasons, all of the claims are believed to be in condition for allowance and a formal Notice of Allowance is courteously solicited.

Respectfully submitted,

A handwritten signature in cursive script that reads "Ronald W. Hind".

Ronald W. Hind

Amend the Drawings as follows:

Cancel the drawings and substitute the new set consisting of 3 sheets having FIGS. 1-8.

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Declaraciones según la Regla 4.17:

- sobre el derecho del solicitante para solicitar y que le sea concedida una patente (Regla 4.17(ii)) para todas las designaciones
- sobre la calidad de inventor (Regla 4.17(iv)) sólo para US

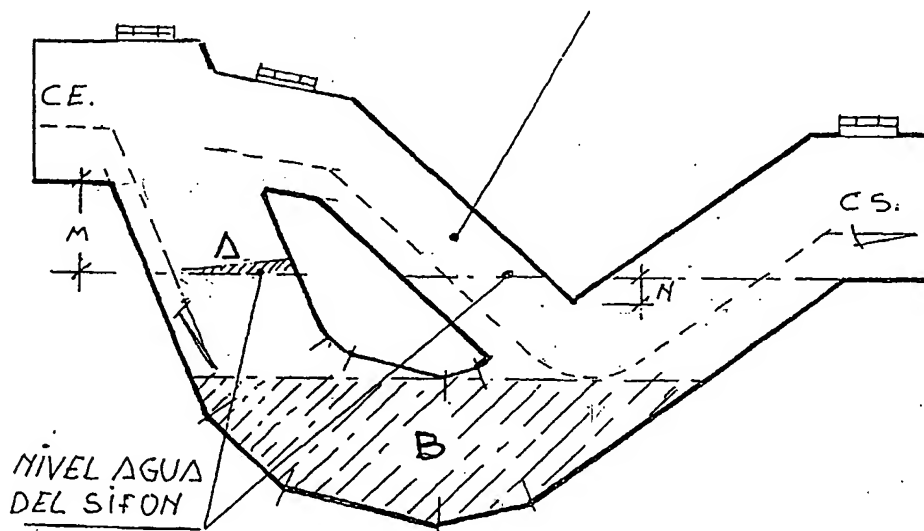
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[Continúa en la página siguiente]

(54) Title: TWO-WAY TRAP

(54) Título: SIFON DE DOBLE VIA



(57) Abstract: The purpose of the invention is to prevent the blockages that occur in the general drainage traps of buildings. The invention consists in connecting a conduit by positioning it in the inlet part above the trap water float level (M) and in the outlet part below a line (N), thereby forming a new auxiliary trap. The invention is suitable for use in traps in buildings which are connected to the common sewerage system. Said invention provides a technical solution that prevents the obstruction of the trap by means of an alarm which is installed in the conduit wherein the water is diverted due to gravity when the conduit is obstructed. Said alarm signals any obstruction in the conduit so that it can be cleared without waiting for the consequences of such a situation to occur. Other versions of the invention consist in installing said conduit in the upper or lateral part of the trap, on the connection points indicated.

[Continúa en la página siguiente]

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-- antes de la expiración del plazo para modificar las reivindicaciones y para ser republicada si se reciben modificaciones

Para códigos de dos letras y otras abreviaturas, véase la sección "Guidance Notes on Codes and Abbreviations" que aparece al principio de cada número regular de la Gaceta del PCT.

(57) Resumen: El objeto de la invención consiste en prevenir los atascos que se producen en el sifón general de desagüe de edificios: consiste en acoplar un conducto situándolo en la parte de entrada, por encima del nivel de flotación del agua del sifón (M) y por la parte de salida por debajo de dicha línea (N) formándose así un nuevo sifón auxiliar: será de aplicación en los sifones de edificios que conecten al albañal general: aporta como solución técnica que evita la obstrucción del sifón al disponer de este conducto donde por gravedad se desvía el agua cuando éste se obstruye, permitiendo colocar una alarma que indique cuando éste se obstruye y proceder a desatascarlo sin esperar las consecuencias que se derivan en estos casos. Las alternativas consisten en colocar dicho conducto en la parte superior o lateral del sifón, en los indicados puntos de conexión

1.- a) TITULO

SIFON DE DOBLE VIA

b) La invención se refiere al SECTOR DE LA CONSTRUCCIÓN

c) El estado de la técnica conocidos por el solicitante se refieren al del sifón general de desagüe de los edificios, colocados éstos antes de su conexión a la red de alcantarillado, para evitar que las emanaciones y mal olor procedentes de la cloaca se extienda por la red de desagües del edificio, al interior de viviendas y medio ambiente a través de los desagües de terrazas y patios (ver figuras nº1 al 4).

El problema que se plantea en este caso, es la imposibilidad de prever cuando se producirá el atasco, que puede ser generalmente por el vertido de materias solidas o acumulación de depositos que no son arrastrados por el agua (figura zona b) o por la solidificación de espumas de detergentes que se acumulan en la zona A (figura 4 del estado de la técnica anterior).

d) EXPLICACIÓN DE LA INVENCION

La invención consiste en la posibilidad de prevenir y por tanto poder solucionar los atascos que se producen en los sifones generales de los edificios, evitando los perjuicios y molestias que se derivan de este tipo de obstrucciones que básicamente consisten en un retroceso del agua del albañal hasta que ésta sale por los desagües de plantas bajas, patios, terrazas y sanitarios con fuerte pestilencia, produciéndose así en muchos casos la rotura del colector de la finca al no estar preparado para soportar tanto peso de agua, lo que supone en la mayoría de los casos la inundación de bajos y sótanos con, repetimos, una fuerte pestilencia.

La invención consiste, básicamente y previo perfilado del sifón general en una forma más funcional, en acoplar a éste un nuevo conducto de diámetro inferior de forma tal que conecte la parte de entrada de agua por encima del nivel de flotación dentro de la cota (M) (figura 8) con la parte de salida en el extremo opuesto del sifón pero por debajo del nivel de flotación a una cuota (N), formándose así un nuevo sifón de DOBLE VIA de desagüe que cumple con las funciones del anterior, es decir, evitar los malos olores y emanaciones procedentes de la cloaca.

Este nuevo conducto o sifón auxiliar² sólo entrará en funcionamiento (en virtud del posicionado de sus conexiones) cuando este obstruido, total o parcialmente el sifón general. En estos casos el agua, por efecto de la gravedad, se desviará a este nuevo conducto sin que se paraliquen las funciones de desagüe de la finca, evitándose así las consecuencias anteriormente descritas. Cabe asimismo la posibilidad de conectar una alarma óptica o acústica, que nos indique cuando el agua discurre por el conducto auxiliar, lo cual será indicativo de que debemos proceder a la limpieza del sifón general por haberse éste obstruido en mayor o menor grado. No obstante, de producirse esta última circunstancia y a pesar del atasco, continuaría funcionando hasta el momento que se produjese una obturación del conducto o sifón auxiliar.

e) DESCRIPCIÓN DE LOS DIBUJOS

En la figura 5 y 6 podemos ver un dibujo de alzado y planta con el acoplamiento del conducto de doble vía, si bien es en la figura 8 donde mejor se aprecia su funcionamiento. Al obstruirse total o parcialmente el sifón en la zona A (espumas solidificadas) o en zona B (elementos sólidos que no son arrastrados) el agua por gravedad subirá de nivel hasta encontrar el sifón de doble vía situado a una distancia (M) y desembocará en la parte opuesta del sifón a partir de la distancia (N) del nivel de flotación según la línea punteada del recorrido del agua. En su desembocadura por efecto de las turbulencias que en este punto se puedan crear, sobre todo en días de lluvia, que es cuando existe un mayor caudal de aporte, puede ayudara desatascar la obstrucción al remover las partes sólidas pero no compactadas.

f) EL MODO DE REALIZACIÓN DE LA INVENCION CONSISTE:

En construir el sifón de doble vía de forma manual utilizando conductos de PVC de presión, en tramos rectos o curvos, cortados a la medida y forma deseada, abocardados y acoplados entre sí, soldándose dichas uniones con chorro de aire caliente y barilla de PVC virgen, lo cual proporciona una buena estanqueidad y resistencia (el empleo de piezas curvas o especiales en general suele ser prohibitivo por el alto coste de las mismas en grandes diámetros). Todas las medidas, diámetros,

puntos de conexión y ángulos de unión serán variables, para ajustarlo a las necesidades de ubicación de cada edificio, permitiendo con ello una fabricación en serie y otra más personalizada.

REIVINDICACIONES

El objeto de la invención consiste en evitar el colapso que se produce en las redes de desagüe de una finca, como consecuencia de la obstrucción del sifón general, consistiendo aquella en el perfilado del sifón en forma funcional, dotándolo de una nueva vía de desagüe al objeto de poder prevenir dichos colapsos y las graves consecuencias que de ello se derivan.

Se caracteriza este nuevo conducto o sifón de doble vía que sólo entra en funcionamiento cuando se obstruye el sifón general, por disponer de un nuevo sifón auxiliar que actúa de aliviadero o rebosadero del colector general al ser desviada el agua por gravedad a la parte extrema o de salida del sifón, fuera de la zona de atascos y poder aprovechar tal circunstancia para colocar en dicho conducto un sistema de alarma óptico o acústico que indique cuando entra en función esta nueva vía, lo que será indicativo de que se ha producido una obstrucción total o parcial del sifón general.

Las características técnicas que se desean proteger son:

1. El conjunto formado por el nuevo sifón de doble vía que pueda ser de diámetro, material, forma, ángulos de conexión y medidas variables.
2. El conducto que forma la doble vía estará siempre conectado por la parte de entrada del agua por encima del nivel de flotación del agua del interior del sifón (cota M) y por la parte de salida del agua u opuesta del sifón estará conectado siempre por debajo de dicho nivel de flotación (N). Estas cotas en ambos casos serán variables para poder obtener un máximo de rendimiento de la invención y del sifón.
3. El conexionado del conducto que forma la doble vía podrá ser en la parte superior o lateral del sifón general, siempre por encima y por debajo de las mencionadas cotas de conexión anteriormente descritas.
4. La colocación opcional de un sistema de alarma en el o los conductos de doble vía, bien sea ésta óptica o acústica.

(19)



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(54) **TWO-WAY TRAP**

ZWEIWEGE-SIPHON

SIPHON A DOUBLE VOIE

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(56) References cited:
**GB-A- 2 146 675 US-A- 2 278 034
US-A- 4 962 370**

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• **PATENT ABSTRACTS OF JAPAN vol. 17, no. 486
03 September 1993 & JP 05 118 066 A
(MATSUSHITA ELECTRIC WORKS LTD) 14 May
1993**

(72) Inventor: **Anguera Font, Juan
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Note: Within nine months from the publication of the mention of the grant of the European patent, any person may give notice to the European Patent Office of opposition to the European patent granted. Notice of opposition shall be filed in a written reasoned statement. It shall not be deemed to have been filed until the opposition fee has been paid. (Art. 99(1) European Patent Convention).

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Description

FIELD OF THE INVENTION

[0001] The invention refers to the construction industry.

BACKGROUND OF THE INVENTION

[0002] The state of the art known by the applicant refers to general drain traps in buildings. Those general traps are installed upstream of the connection to the sewer network, to prevent effluence and foul odours from the sewer from spreading through the building drainage network to the interior of buildings and the environment and through the drains of terraces and patios (see Figs. 1 to 4). The problem posed in this case is that it is impossible to anticipate when blockage will occur, which is generally due to the discharge of solid materials into the drain or to accumulation of deposits that are not carried away by the water (Fig. 4, Zone B), or to solidification of detergent scum that accumulates in zone A (Fig. 4 of the above state of the art).

OBJECT OF THE INVENTION

[0003] It is the object of the invention to provide a solution for preventing drain blockages that may occur in general building traps, thus precluding the difficulties and troubles resulting from this type of obstruction, which basically causes water from the sewer backing up until it runs out through the drains of ground floors, patios, terraces and plumbing fixtures, producing a strong stench and in many cases causing the building's main sewer to break, as it is not prepared to support the weight of so much water. All this means that, in most cases, ground floors and basements are flooded with, we repeat, a strong stench.

SUMMARY OF THE INVENTION

[0004] By designing the general trap in a more functional way, the invention basically consists of connecting to the general trap a new smaller diameter duct, so that it connects the water inlet part above the waterline within elevation (M, Fig. 8) to the outlet part at the opposite end of the trap but below the waterline at an elevation (N), thus forming a new, second drain trap that fulfils the previous functions, i.e. prevents foul odours and effluents from exiting the sewer.

[0005] This new, auxiliary duct or auxiliary trap will only start working (by virtue of the position of its connections) when the general trap is totally or partially obstructed. In these cases, the water, by the effect of gravity, will be detoured to this new duct without interrupting the building's drainage function and thus avoids the consequences described above. It is also possible to connect an optic or acoustic alarm that indicates when water

is flowing through the auxiliary duct, which will be a warning that the general trap must be cleaned because it is blocked to a greater or lesser extent. Nevertheless, if this latter situation should occur, and in spite of the blockage, the trap would continue to work up until the moment when the auxiliary duct or trap is closed off as well.

BRIEF DESCRIPTION OF THE DRAWINGS

[0006]

Figs. 1 to 3 show a drain trap of the prior art in various views;

Fig. 4 shows the drain trap of Figs. 1 to 3 partially filled with solid residues;

Figs. 5 and 6 show a side and a top view, respectively, of the trap structure of the invention; and

Figs. 7 and 8 show the trap structure of the invention in cross section and its function when partially filled with solid residues, respectively.

DETAILED EXPLANATION OF THE INVENTION

[0007] Figures 5 and 6 show a side and top view, respectively of the invention, showing the coupling of the auxiliary duct, although it is in Fig. 8 where its operation can best be appreciated, so that reference is first made to the latter.

[0008] When the trap in zone A (solidified scum) or in zone B (solid elements that are not carried away) becomes totally or partially obstructed, the water will back-up until it reaches the auxiliary duct located at a level M above the overflow waterline defined by the outlet section IP of the trap, and it will flow out at the opposite end of the duct at a level distance N below the waterline, as is indicated by the dashed line for the water route. At the outlet of the duct, through the effect of turbulence that can occur at this point, especially on rainy days when there is a larger make-up flow, it can help to clear the obstruction by removing the solid parts in ZONE B that are not compacted.

THE IMPLEMENTATION OF THE INVENTION

[0009] Manually constructing the two-way trap by using PVC pressure pipe, in straight or bent sections and cut to the desired size and shape, forming the openings and coupling them to each other, and welding these joints with a hot air jet and virgin PVC rod, which provides good water-tightness and resistance (the use of bent or special pieces is usually prohibitive because of the high cost for large diameters). All measurements, diameters, connection points and angle irons shall be variable, to adapt to the siting needs of each building,

thus allowing for serial and more customised fabrication.

[0010] The purpose of the invention is to prevent the collapse of a building's drainage networks as a result of obstruction of the general trap. It involves functionally designing the trap structure by providing it with a new drainage duct in order to prevent these collapses and the serious consequences resulting from them.

[0011] This new duct or second trap is characterised by the fact that it only starts working when the general trap is obstructed, as it forms a new auxiliary trap that acts as a spillway or overflow channel for the general trap since the water is detoured by gravity via the auxiliary duct to the outlet section of the trap, away from the blocked zone, and that this situation can be taken advantage of to install an optic or acoustic alarm system in this duct that indicates when same starts working, which will be a warning that a total or partial obstruction of the general trap has occurred.

Claims

1. Drain trap structure for installation in buildings, comprising an inlet section (IP) and an outlet section (OP), the inlet section (IP) being disposed in a first predetermined level (M) above the overflow water level defined by the level of the outlet section (OP), and further comprising a trap interconnecting said inlet and outlet sections (IP, OP) and having a descending portion connected to the inlet section (IP) and an ascending portion connected to the outlet section (OP), **characterised in that** a duct is branched off the inlet section (IP) at or above said first predetermined level (M) and is connected to the ascending portion of the trap at a location so that the uppermost edge portion of the entrance opening of said duct into the ascending portion is disposed in a predetermined level distance (N) below the overflow water level.
2. The drain trap structure of claim 1, wherein said duct has a diameter which is smaller than that of said trap.
3. The drain trap structure of claim 1 or 2, wherein an optic or acoustic warning system is connected to said duct.

Patentansprüche

1. Geruchsverschlussanordnung für die Installation in Gebäuden, enthaltend einen Einlassabschnitt (IP) und einen Auslassabschnitt (OP), wobei der Einlassabschnitt (IP) in einer ersten vorbestimmten Höhenlage (M) über dem Überlauf-Wasserpegel liegt, der durch die Höhenlage des Auslassabschnitts (OP) bestimmt ist, und weiter enthaltend einen Ge-

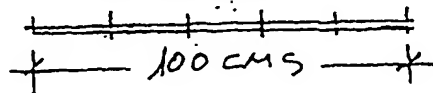
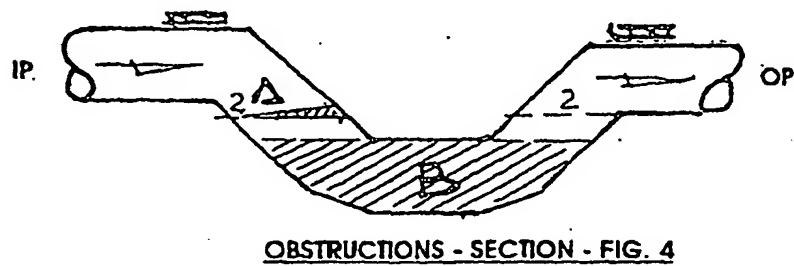
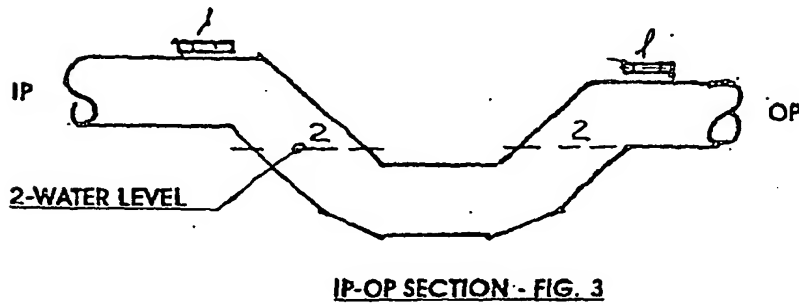
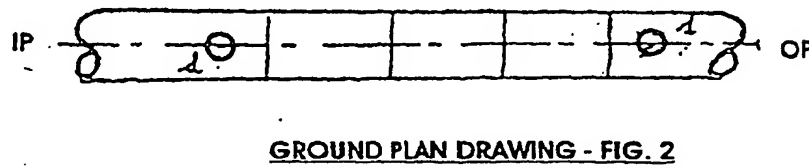
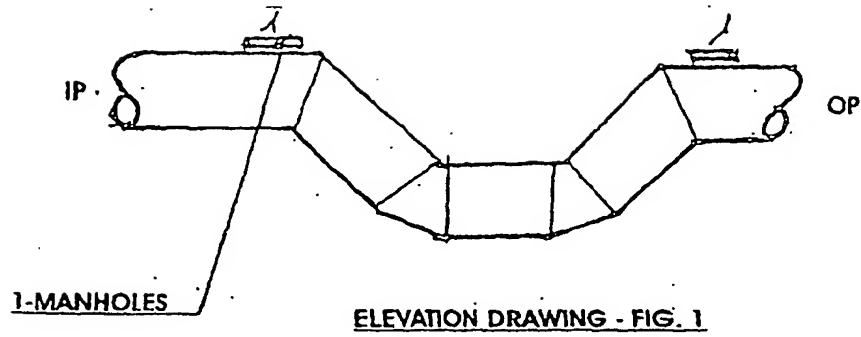
ruchsverschluss, der die Einlass- und Auslassabschnitte (IP, OP) miteinander verbindet und einen mit dem Einlassabschnitt (IP) verbundenen absteigenden Teil und einen mit dem Auslassabschnitt (OP) verbundenen aufsteigenden Teil aufweist, **dadurch gekennzeichnet, dass** eine Rohrleitung von dem Einlassabschnitt (IP) an oder oberhalb der ersten vorbestimmten Höhenlage (M) abzweigt und mit dem aufsteigenden Teil des Geruchsverschlusses an einer solchen Stelle verbunden ist, dass der oberste Randabschnitt der Öffnung der Leitung in den aufsteigenden Teil in einem vorbestimmten Höhenabstand (N) unter dem Überlauf-Wasserpegel liegt.

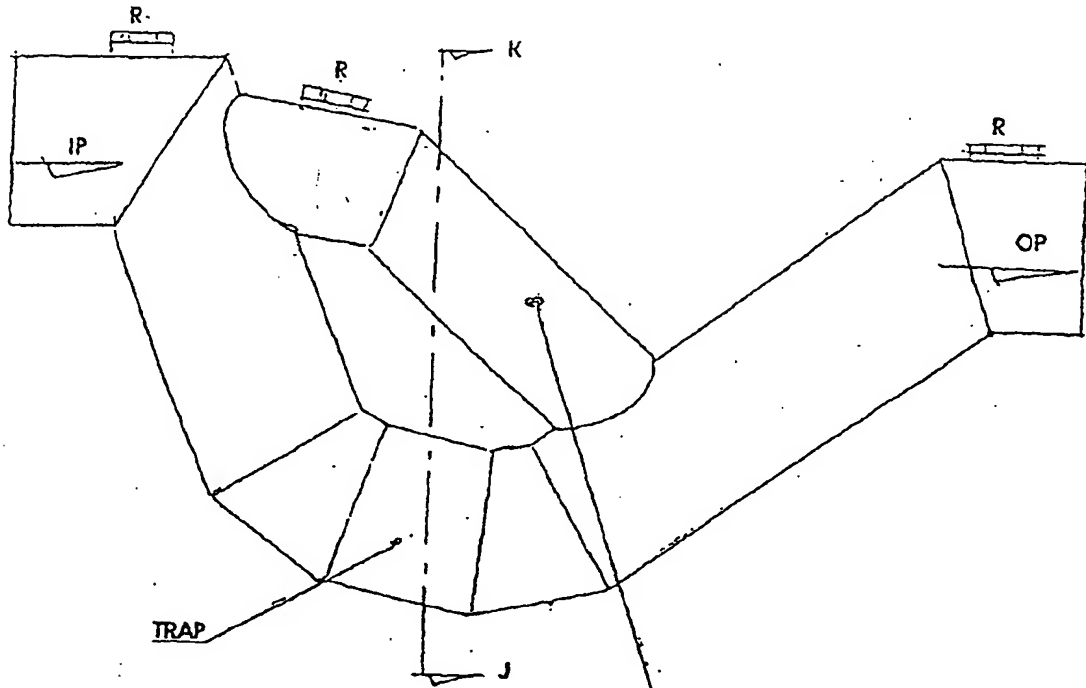
2. Geruchsverschlussanordnung nach Anspruch 1, bei der die Rohrleitung einen Durchmesser hat, der kleiner als der des Geruchsverschlusses ist.

3. Geruchsverschlussanordnung nach Anspruch 1 oder 2, bei der ein optisches oder akustisches Warnsystem mit der Rohrleitung verbunden ist.

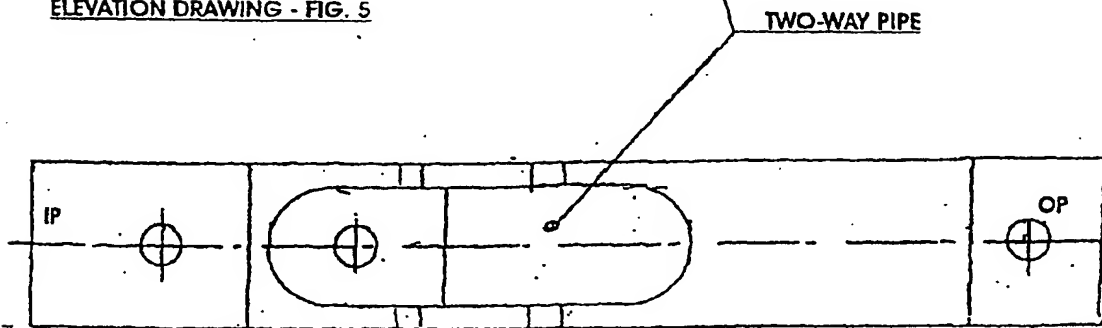
Revendications

1. Structure de siphon d'égout destinée à être installée dans des bâtiments, comprenant une section d'entrée (IP) et une section de sortie (OP), la section d'entrée (IP) étant disposée à un premier niveau prédéterminé (M) au-dessus du niveau d'eau de trop-plein défini par le niveau de la section de sortie (OP), et comprenant en outre un siphon reliant entre elles lesdites sections d'entrée et de sortie (IP, OP) et possédant une partie descendante reliée à la section d'entrée (IP) et une partie ascendante reliée à la section de sortie (OP), **caractérisée en ce qu'un conduit est raccordé à partir de la section d'entrée (IP) au niveau ou au-dessus dudit premier niveau prédéterminé (M) et est relié à la partie ascendante du siphon à un endroit tel que la partie formant bord supérieur de l'ouverture d'entrée dudit conduit dans la partie ascendante soit disposée à une distance de niveau prédéterminée (N) en dessous du niveau d'eau de trop-plein.**
2. Structure de siphon d'égout selon la revendication 1, dans laquelle ledit conduit a un diamètre qui est inférieur à celui dudit siphon.
3. Structure de siphon d'égout selon la revendication 1 ou 2, dans laquelle un système d'alerte optique ou acoustique est relié audit conduit.

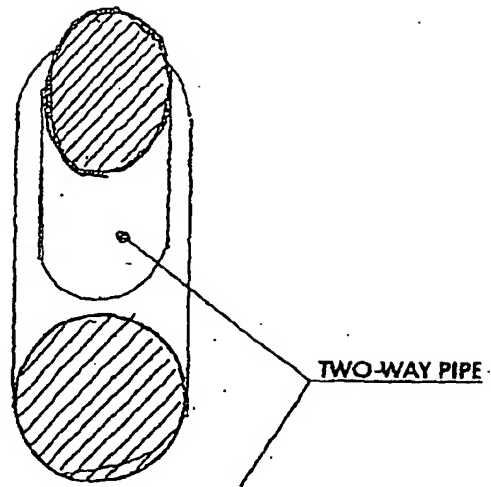




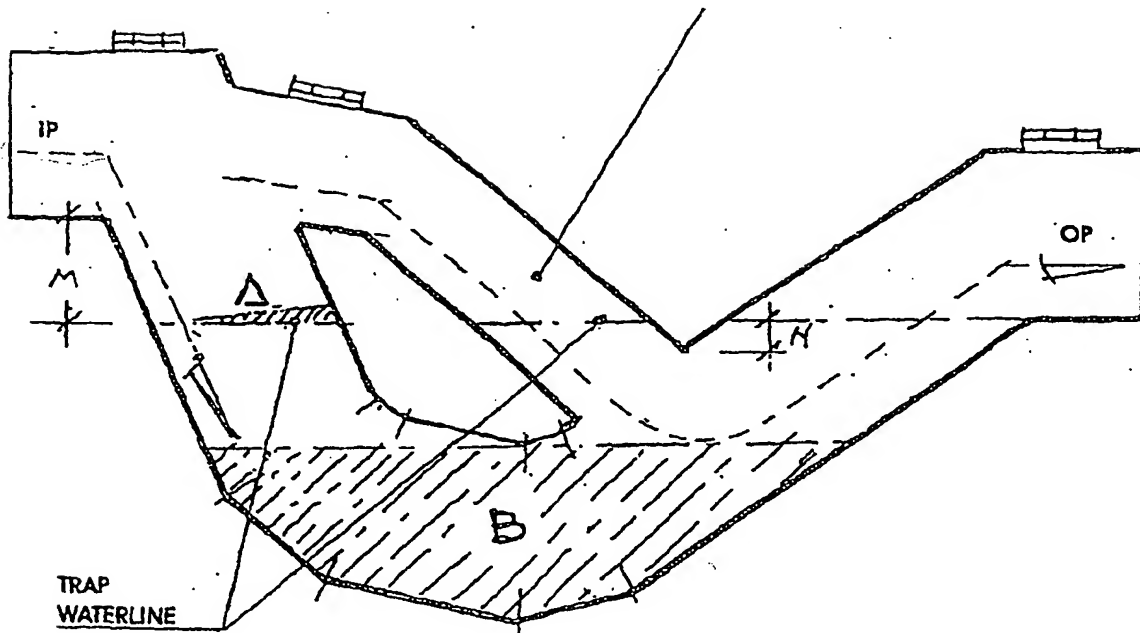
ELEVATION DRAWING - FIG. 5



GROUND PLAN DRAWING - FIG. 6

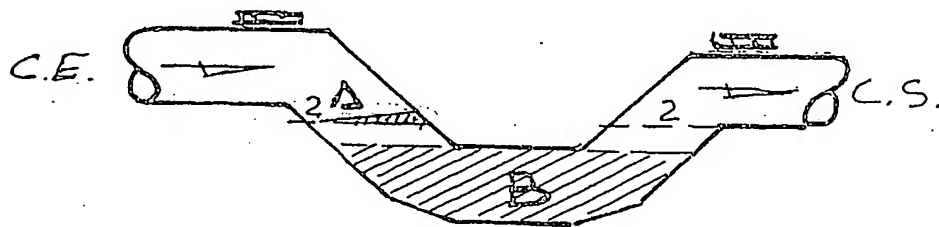
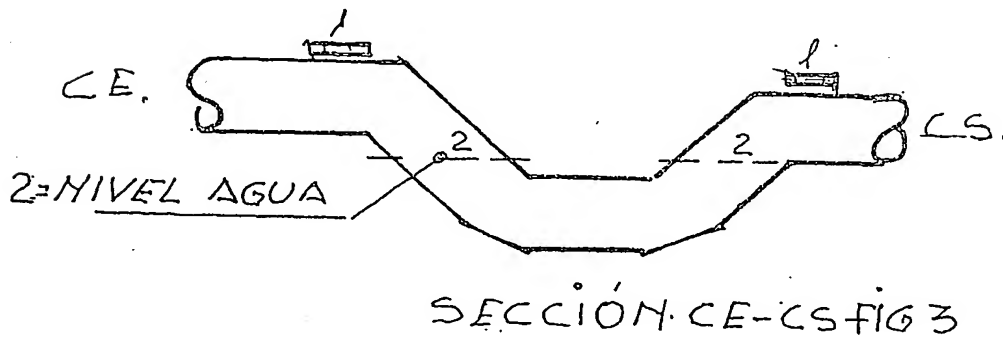
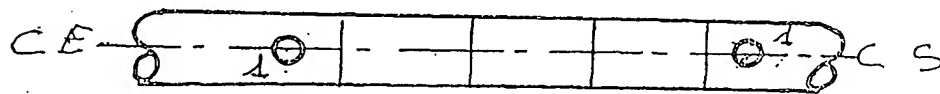
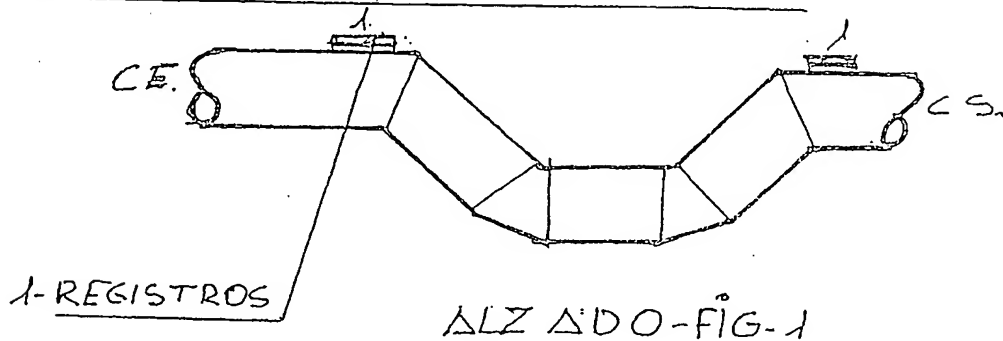


VERTICAL SECTION - KJ FIG. 7



LONGITUDINAL SECTION IP-OP FIG. 8

SIFON DE DOBLE VÍA TÉCNICA ANTERIOR DE SIFON GENERAL DE EDIFICIO



E G

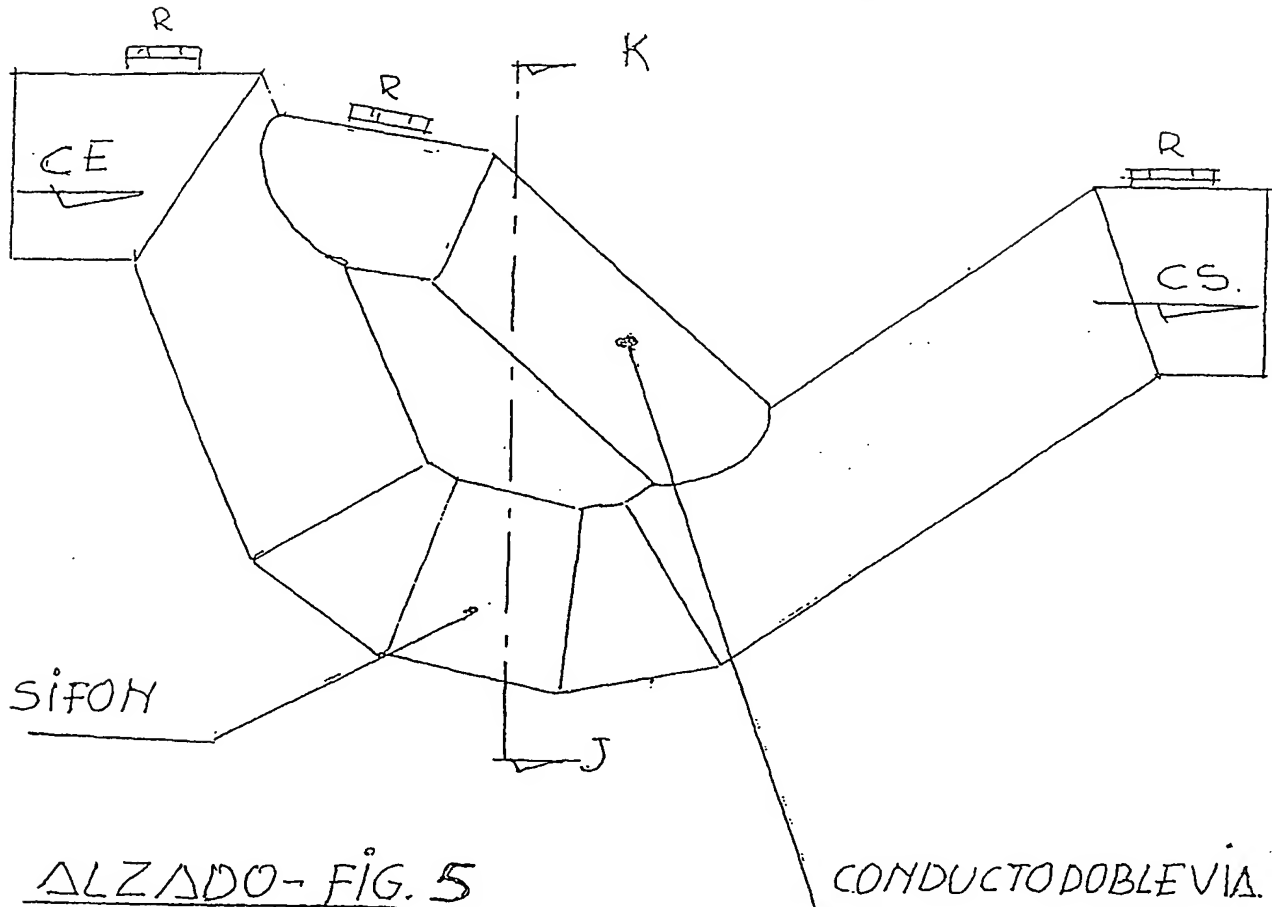
CE = CONDUCTO ENTRADA

CS = CONDUCTO SALIDA

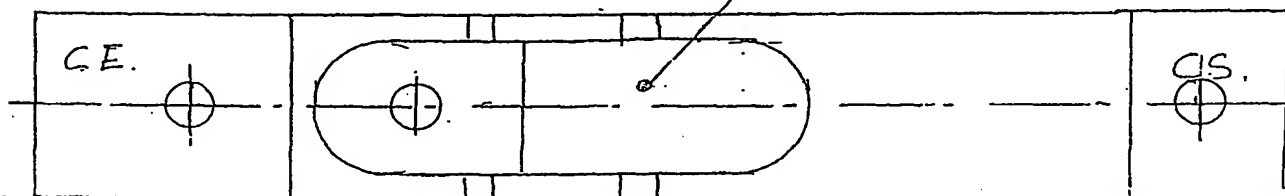
A x B - ZONAS DE OBSTRUCCIONES

100 cms

SIFÓN DE DOBLE VÍA



ALZADO-FIG. 5



PLANTA-FIG. 6

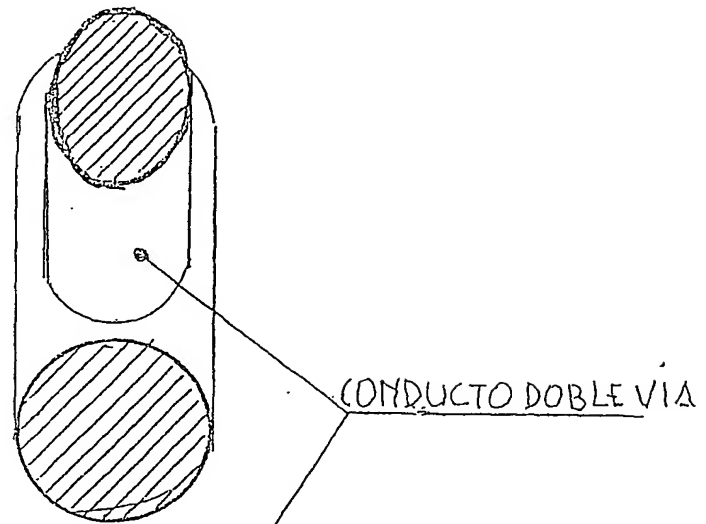
CE = CONDUCTO DE ENTRADA

CS = CONDUCTO DE SALIDA

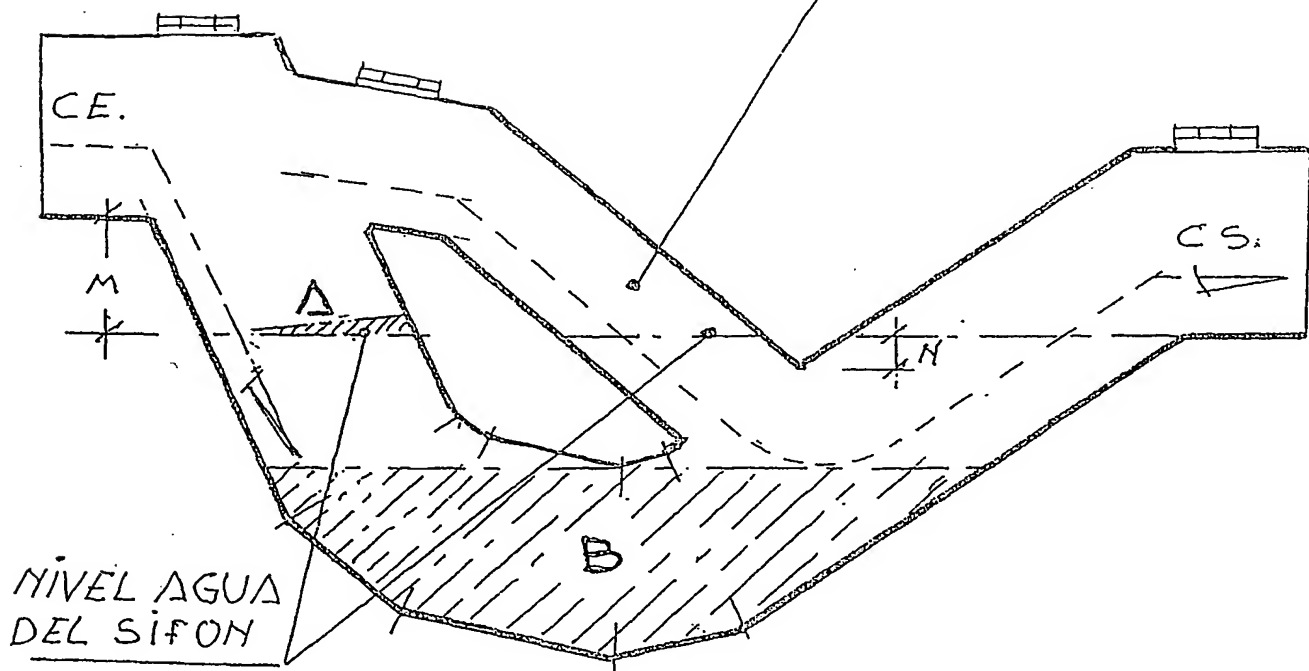
R = REGISTROS DE LIMPIEZA

E.G. 100 CM.

SIFÓN DE DOBLE VÍA



SECCIÓN VERTICAL-KJ FIG.7



SECCIÓN LONGITUDINAL CE-CS. FIG.8

A y B ZONAS DE OBSTRUCCION
 --- -- RECORRIDOS DEL AGUA

INTERNATIONAL SEARCH REPORT

International application No.

PCT/ES 02/00004

A. CLASSIFICATION OF SUBJECT MATTER

IPC⁷ E03C 1/284

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC⁷ E03C, E02D, E03D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2278034 A (ARNOLD et al.) 31 March 1942 (31.03.42), the whole document	1-3
A	US 4962370 A (BORRIELLO) 09 October 1990 (09.10.90), abstract, figures	1,4
A	GB 2146675 A (FARKAS) 24 April 1985 (24.04.85), page 1, line 39-42; figures 1,2	1,3
A	PATENT ABSTRACTS OF JAPAN, Vol. 17, n° 486, 03.09.1993 & JP 5118066 A (MATSUSHITA ELECTRIC WORKS LTD.) 14 May 1993 (14.05.93); abstract, figures	1,2

☐ Further documents are listed in the continuation of Box C.☐ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

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"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

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"&" document member of the same patent family

Date of the actual completion of the international search

29 April 2002 (29.04.02)

Date of mailing of the international search report

11 June 2002 (11.06.02)

Name and mailing address of the ISA/

S.P.T.O

Authorized officer

Facsimile No.

Telephone No.

INTERNATIONAL SEARCH REPORT
Information on patent family members

International Application No
PCT/ES 02/00004

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2278034 A	31.03.1942	NONE	
US 4962370 A	09.10.1990	NONE	
GB 2146675 A	24.04.1985	NONE	
JP 5118066 A	14.05.1993	NONE	

INFORME DE BUSQUEDA INTERNACIONAL

Solicitud internacional n°
PCT/ES 02/00004

A. CLASIFICACIÓN DEL OBJETO DE LA SOLICITUD

CIP⁷ E03C 1/284

De acuerdo con la Clasificación Internacional de Patentes (CIP) o según la clasificación nacional y la CIP.

B. SECTORES COMPRENDIDOS POR LA BÚSQUEDA

Documentación mínima consultada (sistema de clasificación, seguido de los símbolos de clasificación)
CIP⁷ E03C, E02D, E03D

Otra documentación consultada, además de la documentación mínima, en la medida en que tales documentos formen parte de los sectores comprendidos por la búsqueda

Bases de datos electrónicas consultadas durante la búsqueda internacional (nombre de la base de datos y, si es posible, términos de búsqueda utilizados)

C. DOCUMENTOS CONSIDERADOS RELEVANTES

Categoría *	Documentos citados, con indicación, si procede, de las partes relevantes	Relevante para las reivindicaciones n°
A	US 2278034 A (ARNOLD et al.) 31.03.1942 todo el documento	1-3
A	US 4962370 A (BORRIELLO) 09.10.1990 Resumen, figuras	1,4
A	GB 2146675 A (FARKAS) 24.04.1985 página 1, línea 39-42; figuras 1,2	1,3
A	PATENT ABSTRACTS OF JAPAN, Vol. 17, n° 486, 03.09.1993 & JP 5118066 A (MATSUSHITA ELECTRIC WORKS LTD.) 14.05.1993; resumen, figuras	1,2

☐ En la continuación del recuadro C se relacionan otros documentos ☒ Los documentos de familia de patentes se indican en el anexo

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"L" documento que puede plantear dudas sobre una reivindicación de prioridad o que se cita para determinar la fecha de publicación de otra cita o por una razón especial (como la indicada).

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"P" documento publicado antes de la fecha de presentación internacional pero con posterioridad a la fecha de prioridad reivindicada.

"T" documento ulterior publicado con posterioridad a la fecha de presentación internacional o de prioridad que no pertenece al estado de la técnica pertinente pero que se cita por permitir la comprensión del principio o teoría que constituye la base de la invención.

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Fecha en que se ha concluido efectivamente la búsqueda internacional. 29 abril 2002 (29.04.2002)

Fecha de expedición del informe de búsqueda internacional

11 JUN 2002

11.06.02

Nombre y dirección postal de la Administración encargada de la búsqueda internacional O.E.P.M.

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INFORME DE BUSQUEDA INTERNACIONAL

Solicitud internacional n°

PCT/ES 02/00004

Documento de patente citado en el informe de búsqueda	Fecha de publicación	Miembro(s) de la familia de patentes	Fecha de publicación
US 2278034 A	31.03.1942	NINGUNO	
US 4962370 A	09.10.1990	NINGUNO	
GB 2146675 A	24.04.1985	NINGUNO	
JP 5118066 A	14.05.1993	NINGUNO	